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Mr. Wilcox

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief

M O N T H L Y N E W S L E T T E R

Washington, D. C., October 20, 1930.

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: The following are the quarterly requisition numbers for:
: the second quarter of the fiscal year 1931: Gasoline, oil and:
: grease A. E. 170; repair and upkeep to motor vehicles and :
: tractors, including garage rent, A.E. 171; repair of engi- :
: neering equipment and office equipment, A. E. 172;miscellaneous :
: field engineering equipment and supplies, A. E. 193. :
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During the latter part of September Mr. McCrory went to Toledo to inspect the corn borer work at that station. From there he proceeded to southern Iowa for conferences in connection with the soil erosion project. On his return he was met by J. G. Sutton at Chicago, and conferred with him regarding his work on drainage pumping investigations.

Contracts for construction material in connection with the experimental cotton gin at Delta Experiment Station, Stoneville, Miss., have been let and most of the material has been delivered. Erection of the steel frame for the laboratory is in progress and bids have been received for the laying of the hollow tile walls. A considerable amount of machinery to be used in connection with the cotton gin studies has been purchased.

W. M. Hurst is conducting some experiments on artificial drying of rice in Arkansas. Other similar experiments are in progress at Beaumont, Texas. Later Mr. Hurst will go to Jeanerette, La., and install equipment for conducting experiments on the artificial drying of forage. The rice drying studies are in cooperation with the Bureau of Agricultural Economics and the forage drying project is in cooperation with the Animal Husbandry Division, B.A.I., and the Division of Forage Crops B.P.I.

H. C. Mauer has completed surveys and maps of 12 farms in North Carolina, in connection with the land development project and is now making similar surveys in Georgia. These studies are for the purpose of determining the benefit that can be secured by improving the physical condition of fields, for instance by adjusting field sizes and shapes, and removing ditches, stumps and other obstructions to cultivation. This project is under the general charge of G. R. Boyd.

J. T. Bowen is designing a boiler plant and heating equipment for the Washington Zoo. He is also making a study of the entire electrical system of the Beltsville Experiment farm, in order to care for the increased load necessitated by the additional electrical equipment to be installed there.

G. A. Cumings has returned from a trip through the principal cotton growing States where he has been engaged in organizing a cooperative project on fertilizer placement studies. This work will be in cooperation with the State Experiment Stations, the Joint Committee on Fertilizer Application, and this Division, and will be carried on in the 9 principal cotton States. It will be in the nature of an extension of the work Mr. Cumings has been engaged upon during the past summer. Mr. Cumings also inspected the construction of experimental fertilizer distributors at Charlotte, N. C.

V. L. Stedronsky has been appointed as Junior Mechanical Engineer, effective October 1. He has been assigned to assist S. J. Dennis on his refrigeration experiments.

M. A. R. Kelley made a trip to Blacksburg and Lynchburg, Va., recently in order to give suggestions regarding the construction and operation of apple storages.

M. C. Betts and S. P. Lyle are attending the meeting of the Northeast section of the A.S.A.E., at Rochester, N.Y. Mr. Betts will present a paper on the subject of roofings.

A party of 12, consisting of 11 students and Professor J. B. Woods of the Agricultural Engineering Department of the University of Arkansas at Fayetteville, visited the Guthrie Soil Erosion Experimental Farm on October 11. Professor Woods stated that an effort would be made next year to include a visit to the Guthrie farm as a requirement of all students taking courses in Agricultural Engineering.

Cost data has recently been compiled of the construction of 61 check dams built in the gullies on the Guthrie Soil Erosion Experimental Farm. The average cost of building 6 small loose brush dams with average dimensions of 15 feet long, 4 feet wide (across gully) and 2 feet high was \$0.98 per dam; of building 18 small brush dams anchored with poles with average dimensions of 13.6 feet long, 6.4 feet wide and 1.5 feet high was \$4.16 per dam; of building 10 large brush dams anchored with stakes and wire with average dimensions of 23.2 feet long, 8.3 feet wide and 3 feet high was \$11.87 per dam; and building 6 pole dams with average dimensions of 1.6 feet long, 8.4 feet wide and 1.6 feet high was \$4.17 per dam.

R. R. Drake reports a rain of 3.5 inches in 24 hours proceeded by a rainfall of .5 inch during the first part of October on the Hays project. Between the years 1868 and 1922 the precipitation at Hays for the entire month of October has never exceeded 4 inches except in 1883 when 4.98 inches were recorded. Run-off from this recent rain practically filled all of the terrace channels having no outlet on the flatter land. On the steeper unterraced lands considerable erosion occurred as compared with very little between the terraces on land with similar slopes. None of the terraces on the Hays project were overtopped or broken.

The Temple Experimental Farm was visited by a 58 hour rainfall varying from 6.07 inches to 6.52 inches ending on the afternoon of October 6. This rainfall was not a severe test on any of the terraces except in the vicinity of high fills crossing gullies, but it afforded an excellent opportunity for observation of water flow through the different structures on the Farm.

Interesting results showing the effectiveness of the presence of organic matter and of plowing in the prevention of soil losses were observed on three similar adjoining terraced areas as a result of the use of silt boxes placed below Parshall measuring flumes: Standing cotton cultivated during the first week of September lost 352 pounds of heavy soil per acre; corn land tilled with a one-way harrow plow about the middle of September, lost 72 pounds and sudan grass turned under for green manure about September 25 lost 17 pounds per acre.

E. M. Mervine made Toledo his headquarters September 16 to 20 while in this area in connection with investigations of sugar beet growing and related machinery.

On September 23 R. B. Gray met at Control Headquarters with the A.S.A.E. Sub-Committee and the Joint Committee on corn borer control.

Mr. Gray left for Boston, Mass. October 12, in connection with the conference and field meeting to be held at the Berkeley Demonstration Farm at Berkley, Mass. October 15. Mr. McCrory also attended this meeting.

September 24 and 25 a general conference was held covering the Agricultural Engineering, Quarantine, and Entomological phases of corn borer control. Over 200 visitors were present comprising Federal and State officials, representatives of Agricultural Colleges and farm machinery manufacturers and farmers from 14 States and Canada. The program in part for the first day consisted in discussions by different engineers of several machines which could be brought onto the conference floor. The conference closed at noon of the second day after an inspection of all of the machinery and a brief discussion of each piece of equipment by various agricultural engineers, which followed an inspection of the various plots at the U.S.D.A. experiment farm.

Frank Irons spent the week of September 22 in Toledo assisting in the machinery preparations for and attending the above conference. He returned to Boston the 27th to resume his work on machinery development for control in New England.

Thayer Cleaver returned September 25 to Urbana to continue his cooperative work on control machinery after spending the three preceding days at Toledo assisting with the machinery and attending the conference.

Prof. R. U. Blasingame from State College, Pa. spent October 6 at Toledo conferring on matters pertaining to the cooperative corn borer control project with Pennsylvania.

L. M. Winsor has been appointed by Governor Dern of Utah to serve on a commission to study the cause of the floods that in the past have periodically occurred in that State, doing a vast amount of damage to property and devastating and destroying the homes and farms of its residents.

O. A. Faris was authorized to accept an invitation to serve on a local committee appointed by the American Engineering Council working jointly with the American Road Builders' Association and the Department of Commerce to make a comprehensive study of drainage and surfacing of air ports.

Dean C. Muckel was appointed Junior Civil Engineer, effective October 1, and will be stationed at Santa Ana to carry on evaporation studies under the supervision of H. F. Blaney and A. A. Young.

A. T. Mitchelson prepared a brief description of water-spreading in southern California, to be included in a publication of the California Division of Water Resources.

R. L. Parshall submitted a brief report of tests on a 3-inch metal Parshall flume. This small flume was calibrated for the purpose of meeting certain demands requiring the measurement of small flows. It is particularly well suited to the measurement of small streams, such as farm deliveries, wastes from farm irrigation, and run-off from small isolated areas. The flume was calibrated at the Fort Collins hydraulic laboratory, where the actual discharge was determined by volumetric measurements, and the heads determined by hook gage to a limit of 0.001 foot.

H. F. Blaney and C. A. Taylor submitted a progress report on "Disposal of Rainfall on the Valley Floor in the Santa Ana River Area, California," covering a study carried on cooperatively with the California State Department of Public Works and the University of California. In this investigation the problem was studied mainly from a soil moisture standpoint, by taking soil samples to a depth below the root zone. Rainfall penetration stations were established on predominating soil types and records kept of rainfall, run-off, transpiration, evaporation, and depth of penetration. The amount of rainfall penetrating to ground water was determined indirectly by establishing values for the other three factors entering into the disposition of rainfall; that is, surface run-off, evaporation, and transpiration. It is expected that this progress report, combined with Mr. Young's report mentioned below, will be embodied in a publication of the California State Department of Public Works on cooperative Santa Ana Investigations.

A. A. Young submitted a progress report on "Evaporation and Transpiration Losses from Moist Areas in the Santa Ana River Basin, California," covering the results obtained in the first year's study of some of the ground water problems in the Santa Ana River basin in southern California under a cooperative agreement with the Division of Water Resources, State Department of Public Works of California. The original purposes of this study were to determine, by tank experiments, the evaporation from bare uncultivated fine sandy loam soils and the consumptive use of water by salt grass and Bermuda grass, where the water table is six feet or less beneath the ground surface. The original plan has been extended from time to time and additional tank experiments are now being conducted to determine the consumptive use of water by tules, cat tails, rushes and willows.

